

REMARKS

Claims 14-15 and 17-19 are pending in this application. For purposes of expedition, claims 1-13 and 16 have been canceled without prejudice or disclaimer. Claim 14 has been amended in several particulars for purposes of clarity and brevity, while claims 17-19 have been newly added in accordance with current Office policy, to further and alternatively define Applicants' disclosed invention and to place in condition for allowance.

Claims 9-16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Nabeshima et al., JP. No. 6-275578 in view of Sakamoto et al., JP 58-200539 for reasons stated on pages 2-4 of the Office Action (Paper No. 6/2004). Specifically, the Examiner asserts that Nabeshima '578 discloses all features of Applicants' claims 9-16, except for "detecting mechanical oscillation generated by the ultrasonic oscillator" which is allegedly disclosed on FIG. 2, Abstract of Sakamoto '539. While Applicants disagree with the Examiner's characterizations of Applicants' base claims 9, 13 and 16, and the Examiner's analysis of Nabeshima '578 and Sakamoto '539, claims 9-13 and 16 have been canceled without prejudice or disclaimer. Claim 14 has been amended to include all limitations of base claim 13, and further defines features that are **not** disclosed or suggested by Nabeshima '578 and Sakamoto '539, and that have **not** been addressed by the Examiner. For example, on page 3 of the Office Action (Paper No. 6/2004), the Examiner only asserts that "the signal received by the oscillation monitoring system of Sakamoto et al would inherently includes [sic] the mechanical oscillation generated by the oscillator 1 of Nabeshima et al." However, claim 14 further defines a step of

“analyzing the detected signals to specify a position inside said vacuum process chamber of said semiconductor processing apparatus at which an abnormality has occurred”, features that are particularly advantageous for reasons described on pages 42-43 of Applicants’ original specification, that are **not** disclosed or suggested by Nabeshima ‘578 and Sakamoto ‘539.

For purposes of completeness, claim 14 has now been rewritten in independent form to define a method of diagnosing a semiconductor processing apparatus for imparting plasma treatment to a sample arranged in a vacuum process chamber, including process gas introduction means for introducing a process gas into said vacuum process chamber, said method comprising:

- imparting mechanical oscillation to said semiconductor processing apparatus;
- detecting mechanical oscillation generated by imparting mechanical oscillation inside said semiconductor processing apparatus as signals; and
- analyzing detected signals to diagnose whether said vacuum process chamber is normally assembled;

wherein the mechanical oscillation to said semiconductor processing apparatus is imparted by at least one oscillator, signals representing mechanical oscillations generated inside said semiconductor processing apparatus are detected by at least one detector, and the detected signals are analyzed to specify a position inside said vacuum process chamber at which an abnormality has occurred.

As amended, claim 14 is believed to be distinguishable over Nabeshima ‘578 and Sakamoto ‘539 and, should be placed in condition for allowance. This is because, Nabeshima ‘578, as a primary reference, only discloses a cleaning device, as shown in FIG. 1, for cleaning plasma treatment chamber which comprises an ultrasonic oscillator for separating foreign matters adhered to an inner surface of the process chamber using an ultrasonic wave vibration from the inner surface and a

discharge means for discharging the separated foreign matters, wherein foreign matters can be effectively discharged without attaching and detaching components. As a secondary reference, Sakamoto '539 only discloses a method for detecting the end point of treatment in dry process which comprises steps of monitoring ultrasonic waves passing through plasma and other ultrasonic waves which are passed therethrough which are oscillated simultaneously with the first-mentioned ultrasonic waves; and detecting the end point of treatment for an object to be processed in accordance with a lag in pulse and a difference in magnitude between both the ultrasonic waves.

Neither Nabeshima '578 nor Sakamoto '539, whether taken individually or in combination, discloses any step of "analyzing mechanical oscillation generated in a semiconductor processing apparatus to diagnose whether the vacuum process chamber is normally assembled" as expressly defined in Applicants' claim 14.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103, the Examiner must show that the prior art reference (or references when combined) must teach or suggest all the claim limitations, and that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, provided with a reasonable expectation of success, in order to arrive at the Applicants' claimed invention. The requisite motivation must stem from some teaching or suggestion to make the claimed combination must be found in the prior art, and **not** based on Applicants' disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 2143. In other words, all the claim limitations must be disclosed or suggested by the prior art. In re Royka,

490 F.2d 981, 180 USPQ 580 (CCPA 1974). "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." ACS Hospital System, Inc v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). The Examiner must point to something in the prior art that suggests in some way a modification of a particular reference or a combination of references in order to arrive at Applicants' claimed invention. Absent such a showing, the Examiner has improperly used Applicants' disclosure as an instruction book on how to reconstruct to the prior art to arrive at Applicants' claimed invention. Furthermore, any deficiencies in the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". See In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002).

In the present situation, Nabeshima '578 and Sakamoto '539 fail to disclose and suggest key features of Applicants' claim 14 and its dependent claim 15. Therefore, Applicants respectfully request that the rejection of claims 14-15 be withdrawn.

Claims 17-19 have been newly added to capture the alternative process which corresponds to the allowed apparatus claims 10-12 as previously presented in parent application, Serial No. 10/229,072. These claims are believed to be allowable at least for the same reasons presented in the parent application, Serial No. 10/229,072 and, more importantly, for reasons that neither Nabeshima '578 nor Sakamoto '539 discloses (1) a step of "analyzing mechanical oscillation generated in a semiconductor processing apparatus to diagnose whether the vacuum process chamber is normally assembled" as expressly defined in Applicants' claim 17; (2) a

step of "determining a resonant frequency of the components by changing the frequency of mechanical oscillation imparted to components provided in a vacuum process chamber to diagnose a condition of the components" as expressly defined in Applicants' claim 18; and (3) steps of providing oscillation means and reception of vacuum process chamber and "analyzing a signal representing mechanical oscillation by the oscillation means detected by the reception means to evaluate the thickness of a film of reacted deposited to an inner wall of the vacuum process chamber" as expressly defined in Applicants' base claim 19. A fee of \$88.00 is incurred by the addition of one extra independent claim.

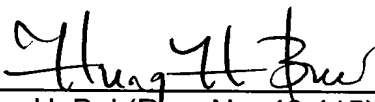
In view of the foregoing amendments, arguments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Should any questions remain unresolved, the Examiner is requested to telephone Applicants' attorney at the Washington DC area office at (703) 312-6600.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, No. 01-2135 (Application No. 500.42015VX1), and please credit any excess fees to said deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By


Hung H. Bui (Reg. No. 40,415)
Attorney for Applicant(s)

HHB:btd

1300 North Seventeenth Street, Suite 1800
Arlington, Virginia 22209
Tel.: (703) 312-6600
Fax: (703) 312-6666